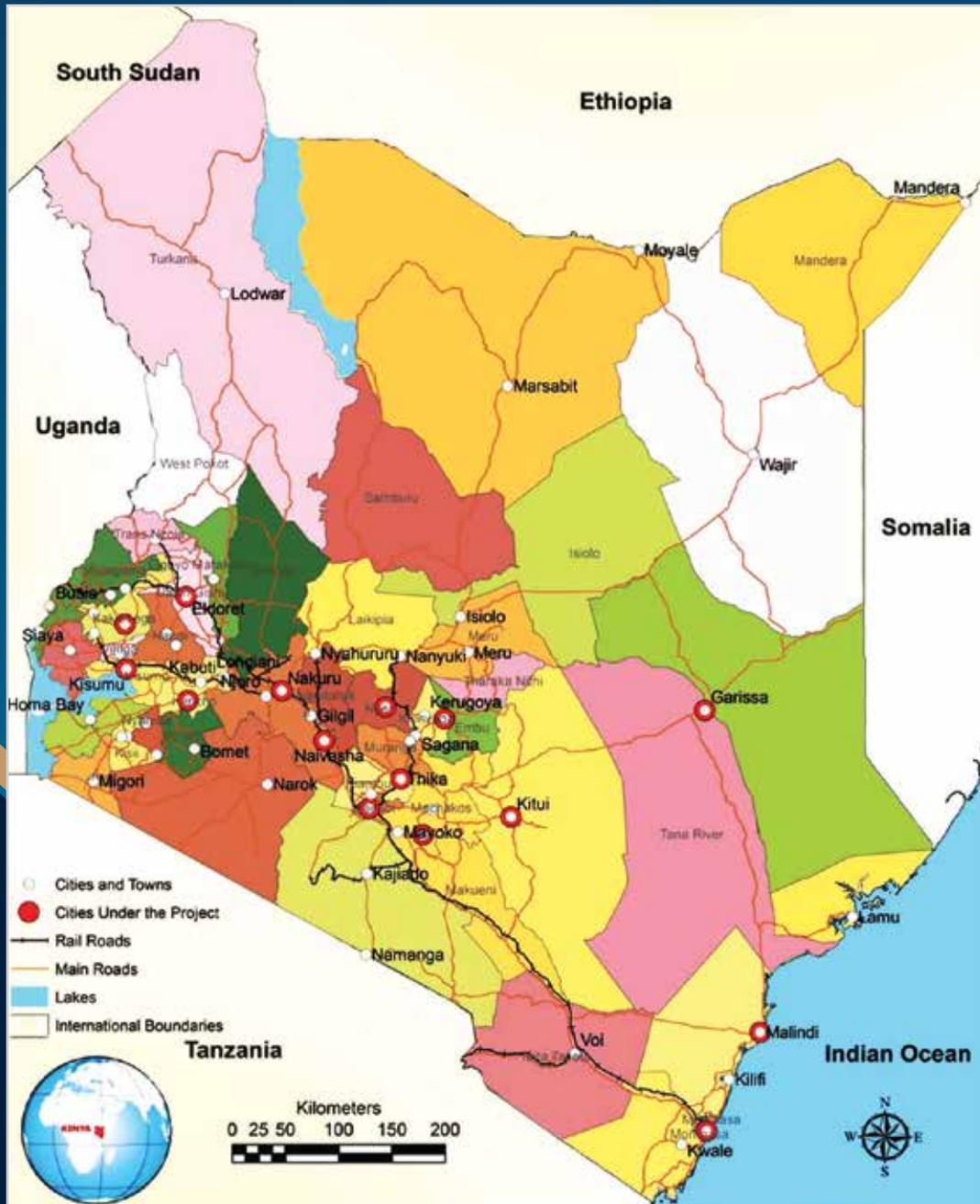


# Kenya

## STATE OF THE CITIES



# GARISSA



# KENYA STATE OF THE CITIES BASELINE SURVEY

STATISTICAL ABSTRACT FOR GARISSA, KENYA



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# ABBREVIATIONS

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<b>CAPI</b>	Computer Assisted Personal Interview
<b>EA</b>	Enumeration area
<b>GOK</b>	Government of Kenya
<b>HH</b>	Household
<b>HUD</b>	U.S. Department of Housing and Urban Development
<b>KIHBS</b>	Kenya Integrated Household Budget Survey
<b>KISIP</b>	Kenya Informal Settlements Improvement Program
<b>KMP</b>	Kenya Municipal Program
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>NMSP</b>	Nairobi Municipal Service Project
<b>PDA</b>	Personal Digital Assistant, in this case a hand held computer used by interviewers
<b>PSU</b>	Primary Sampling Unit
<b>SMSA</b>	Standard Metropolitan Statistical Area
<b>SRS</b>	Simple Random Sample
<b>SSU</b>	Secondary Sampling Unit
<b>WB</b>	World Bank
<b>WBG</b>	World Bank Group



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# INTRODUCTION

---

## Background

The Kenyan government, with the support of development partners, is increasing its investments in urban infrastructure and services. To support these efforts, the World Bank contracted NORC at the University of Chicago to carry out a baseline study of the demographic, infrastructure, and economic profiles of fifteen Kenyan towns and cities: Nairobi City, Mombasa, Naivasha, Nakuru, Malindi, Eldoret, Garissa, Embu, Kitui, Kericho, Thika, Kakamega, Kisumu, Machakos, and Nyeri. This was undertaken in order to deepen understanding of the cities' growth dynamics, and to identify specific challenges to quality of life for residents. The study, called the "Kenya State of the Cities Baseline Survey," collects and analyzes household survey data to produce key statistics and identify differences in conditions among types of households—especially differences between those living in informal versus formal settlements. The ultimate goal is to use the information to establish development priorities for infrastructure and service investments and, eventually, to track the effectiveness of these investments.

Prior to the State of the Cities survey, there were little data available to support the design of programs to improve infrastructure and related services in most Kenyan cities. While there have been several household surveys of Nairobi's informal settlements and numerous analyses using the data, few surveys or analyses have been carried out in other Kenyan towns and cities or for modest-income areas in Nairobi.

To facilitate access to the rich datasets generated by the survey, three written products were commissioned: a Statistical Abstract (such as this one) for each city, a City-at-a-Glance for each city (a two-page summary of the Abstract), and an Overview Report (a more comprehensive discussion of the topics in this Introduction, a topic-by-topic comparative analysis of the fifteen cities, and appendices with the survey instrument). The Abstract's objective is to provide comprehensive but easily accessible information on the wide range of municipal conditions covered in the survey, as reported by households. Some information in the Abstract also comes from secondary sources, such as the national Census and the Kenya Integrated Household Budget Survey (KIHBS). The primary audience for the Abstract includes policy makers, development practitioners, development partners, civil society organizations, and urban residents. Better planning and more productive investments can result from exploiting the information in each city's Abstract.

## Methodology

For this baseline household survey, NORC used a two- and three-stage, stratified, cluster sampling design intended to be representative of poor and non-poor households living in formal and informal settlements in the fifteen cities included in the study. The first-stage sampling frame was based on Kenya's 2009 census frame of enumeration areas (EAs). In the census sample frame, EAs are identified as urban, peri-urban or rural. EAs are further identified as containing formal or informal settlement types. For the first stage sampling, NORC selected EAs from strata identified as informal (slum), urban-formal, peri-urban-formal and rural. In cases where the EAs were "large" (200 to 700 households) these EAs were divided in half, thirds, or quarters and one segment was randomly selected.

For the final stage of sampling, NORC carried out a full household listing in each selected EA (or segment, as the case may be) and randomly selected ten households for interviewing.<sup>1</sup> Because expected response rates were unknown prior to data collection, interviewers were given a target to complete at least seven interviews in each EA. In Garissa, 143 EAs were selected in the first stage. In the second stage, a total of 7,929 households were listed and 1,387 households were selected.

The data for this report are based on 1,035 completed interviews carried out in Garissa from July 14, 2012 to November 12, 2012 by a team of five interviewers and one supervisor. Among eligible households,<sup>2</sup> the completion rate was 68.23%.<sup>3</sup> Data collection took place in both formal and informal settlements simultaneously; 20 interviews were completed in informal settlements and 1,015 were completed in formal settlements. Note that the small number of interviews completed in informal settlements means that the figures presented in the tables for informal areas are not likely to be highly accurate.

## Questionnaire

The Kenya State of the Cities baseline questionnaire was developed iteratively using a base set of questions developed by the World Bank and refined to capture the key variables related to infrastructure access and municipal services of interest to the Kenyan government. The final fielded questionnaire is available in Volume II of the Overview Report. Both the household listing form and the questionnaire were programmed for use as a Computer-Assisted Personal Interview (CAPI) and both were carried out using tablet computers which transmitted data to project servers via the mobile phone network. Interviewers captured GPS coordinates during listing and again at the end of each interview.

## Data Quality

Recorded administration time of the CAPI instrument showed a median duration of 18 minutes in Garissa (21 minutes across all towns and cities). However, duration values may have been compromised by transmission problems and supervisor reviews, which may have overwritten timestamps. Despite the uncertainty of exact durations, data quality measures do not show systematic interviewer-related errors in the final data. Approximately a third of all interviews underwent validation, including call-backs by supervisors or central office staff (in-person and by phone).

## Table Presentation

Each city's Abstract includes a set of tables designed to provide basic information on households' economic and demographic conditions, their housing conditions, and access to infrastructure and services. One challenge in preparing the Abstract was to provide a complete picture of conditions while still being selective in the information presented so as not to overwhelm the reader. A second challenge was to display the information in a way that permits stakeholders to understand conditions faced by different population groups.

To meet these challenges we have developed a set of tables with items believed to be most important for stakeholders and have broken down the items in several ways. In addition to providing an overall picture of household (HH) characteristics, the tables illustrate whether household characteristics differ by key factors. The rows of each table generally list the household characteristics (e.g., size of household,

<sup>1</sup> A complete description of the sampling design is found in "Kenya Municipal Program State of Cities: Overview Report," NORC, June 2013.

<sup>2</sup> Eligible households are defined as occupied dwellings with at least one resident age 18 or older who is present during the field period.

<sup>3</sup> The completion rate is the number of households that successfully completed an interview over the total number of households assigned.

percentage of children in school). The columns present statistics for the entire city, then show how the data differs by location (informal vs. formal areas), household poverty status (poor vs. non-poor), gender of the head of household (male vs. female headed, for informal areas only), as well as other factors pertinent to the particular table.<sup>4</sup>

From each table, one can quickly observe if there are large differences in household characteristics by location, spending power, etc., simply by comparing the cells (numbers). Each table also shows whether the observed differences are statistically significant.<sup>5</sup> “Statistically significant” means that statistical analysis has revealed that a difference, no matter how small or large, is unlikely due to chance or randomness. In practice, statistically significant differences are the ones researchers are interested in—they can be interpreted as telling us about meaningful differences in household characteristics by location, spending power, gender, or other category. When we discuss differences in the text of this report, we will refer to “statistically significant” differences unless otherwise noted.

In terms of policy decisions, whether differences matter is a combination of whether they are statistically significant and how large the differences are. Ultimately, it is up to the policy practitioner to decide how large a difference must be to matter in the context of interest. An important note when interpreting results is that statistical significance does not imply causality. In other words, if differences in values are statistically significant, this does not mean that one variable caused a change in the other variable. Another factor may be influencing both variables; for example, for we may find a “significant” difference between head-of-household education and household poverty, perhaps the key common cause is social status, which affects both their educational attainment and job/spending opportunities. Additionally, where a statistically significant difference is identified it does not imply the direction of the relationship. Perhaps the household poverty is the reason for the different education levels, or vice-versa. In this report, therefore, we will say a household characteristic is “associated with” or “correlated” with certain factors, rather than saying one is caused by another.

In order not to clutter the tables yet provide the reader with the maximum information, we mark statistically significant results in the tables with bold (for two adjacent values in the same row) and italics (to compare adjacent columns of data). Underlined values denote an insufficient number of household responses for some enumeration category of the sampling design to perform a test of statistical significance. The number of observations for a particular variable is noted in the tables in rows denoted by “N”. Cells with no observations are indicated with hyphens (-).<sup>6</sup> The table, below, summarizes the formatting used in tables throughout the Abstract: A value that is both bold and italicized indicates statistically significant differences for two adjacent cells (i.e., values in the same row) as well as for the distributions between adjacent columns. In contrast, a value in standard font—no bolding, italics, or underlining—still means that a significance test was performed but that the values under comparison were not statistically significantly different from each other.

<sup>4</sup> Informal/formal status was defined at the enumeration area level by the Kenya National Bureau of Statistics during the 2009 Census. Poor/non-poor is defined using the answer to a question asking respondents whether their total household expenditure in the last month was above or below a poverty line calculated using the household size (5,567 KSh for each adult 15 years and older + 3,619 KSh for each child aged 5 to 14 + 1,336 KSh for each child under 5 years old).

<sup>5</sup> Statistical significance is noted when a test achieves a p-value  $\leq 0.05$ .

<sup>6</sup> Regarding issues of non-response, both observational and item-specific, see Section 4, below.

There is one caveat to the formatting rules that must be addressed regarding the significance testing of distributions. While the absence of italics sometimes means that the distribution was tested and was not found to be statistically significant, this is often not the case—i.e., there are many distributions which were not tested for significance. To avoid confusion, the comprehensive list of distributions which were tested for significance follow.

- **Table B.2a:** Expenditure ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table B.2b:** Income ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table C.3:** Distribution of home value ranges and rent ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table D.1a:** Percent of households with a piped water connection inside their dwelling by security of ownership; percent of households with a piped water connection inside their compound by security of ownership; percent of households close to piped water access by security of ownership; cost of water by security of ownership; most important water source by security of ownership; reasons for no connection by security of ownership.
- **Table D1.b:** Water source by water quality; water provider by water quality; water treatment buy water quality; treatment methods by water quality.

**Table 1: Description of formats used to denote statistical significance**

Format	When we use it	Example
Bold	Two bolded values in the same row next to each other indicate that the difference is statistically significant.  We also use bold for ‘Yes’ or ‘No’ variables. If bold, it means that the difference between the mean of households that answered ‘yes’ (displayed) and the mean of those that answered ‘no’ (not displayed) is statistically significant. <sup>(a)</sup>	Table A.1 displays the mean household size for households located in formal and informal settlements; if the pair of values is bold, it means that the difference in household sizes between formal and informal areas is statistically significant.  Table B.2 displays the proportion of households which own land (or have tenure) that fall below the poverty line. If bold, it means that this proportion is statistically significantly different from the proportion of households which do not own land that fall below the poverty line.
Italics	We indicate statistically significant differences between columns of three or more cells using italics; this means the difference between the entire distributions (columns) is statistically significant. <sup>(b)</sup>	Table B.2, Monthly household spending power, displays the distribution of households across income and expense ranges. If values appear italicized in both columns for households located in formal and informal settlements, the difference between the two distributions is statistically significant.
Underline	Denotes values where, due to lack of data at the census tract (enumeration area, or EA) level, it was not statistically possible to conduct the significance test. <sup>(c)</sup>	Table B.3 shows the mean value of households’ primary residence with and without land, and of any other residence and/or land. An underlined value means that due to lack of data at the census tract level, it is not possible to perform a test for significant differences.
Hyphen (-)	In cases where there are no data for a cell at all, we note that with a hyphen (-).	Table B.3 shows data related to household finance. For the percentages of households according to source of financing, the cells that display a hyphen means that there were no observations for that particular variable and category.

*Notes:*

a. Here a p-test from an Adjusted Wald test is conducted.

b. Here Pearson’s Chi-squared test is conducted.

c. At least two households are required to compute a household-level variance, which is required to conduct a hypothesis test. Note that this does not imply that the respective table values are based on just one household or even just one EA.

Another feature of the data worth mentioning is that outliers (responses that are very different from all the others) were not a major issue in the survey data, affecting just three variables in any important way.<sup>7</sup>

Finally, note that in tables presenting a distribution of responses, if some response categories are left out then the distribution will not add up to 100%. In cases where all response categories are listed then the first row of responses is given as 100. Unless otherwise noted, all figures presented in the tables are percentages.

The core of this abstract comprises a set of tables divided into chapters. Each chapter contains a textual summary of each table and highlights some of their implications. The tables are divided into four groups:

- A. Household characteristics – 3 tables
- B. Economic profile – 5 tables
- C. Tenure, tenure security, dwelling characteristics – 3 tables
- D. Infrastructure services – 4 tables

Notes to the tables are identified by small letters appearing as superscripts at the end of each table. All tables present weighted figures at the household level, unless otherwise noted, to reflect the total population of the respective table cell. The N values, however, present the unweighted number of households, unless otherwise noted.

The final chapter of this abstract contains a series of three “Development Polygons”. These complement the detailed tables presented in sections A through D by illustrating an “overall” sense of the state of the city. The figures included are the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond.<sup>8</sup>

While the tables generally have a common set of column headings, there is some variation. The following are definitions for those headings that require clarification:

- *Informal/Formal Areas* – This distinguishes between areas based on whether most households in the area have property title and official services. It is a designation provided by a status code at the level of the EA (Enumeration area) as used by the National Census.
- *Gender (Informal)* – For the households living in the locations coded as “Informal,” data for household characteristics are provided for both male- and female-headed households. As is standard, the male-headed households may contain the spouse while female-headed households do not.
- *Class (of durable)* – Durable assets are a standard measure of household wealth. They are grouped into three classes, roughly based on their likely market value and degree of permanence. The actual items in each class are indicated in the table. The values reported for these categories are the number owned by the household, not their average or total value.
- *Spending Power* – The total value of household expenditures collected by the survey, excluding rent or mortgage payments.

<sup>7</sup> Across all fifteen towns and cities these were (i) home value, in which 20 responses were reported in millions units instead of as the value itself (so we simply divided these responses by a million); (ii) 40 respondents reported travel time for a weekly or monthly commute rather than a daily commute (these over-eight-hours responses were dropped); (iii) we removed one case in which the time to get water was over a week.

<sup>8</sup> The basic format for all three figures appear in the World Bank Policy Research Working Paper, “Poverty, Living Conditions, and Infrastructure Access” A Comparison of Slums in Dakar, Johannesburg, and Nairobi” by Sumila Gulyani, Debabrata Talukdar, and Darby Jack (2010). We strived to make our own figures as similar as possible, though some deviations, noted in the accompanying text, were necessary.

- *Access to Infrastructure* – This indicator combines six categories of infrastructure (divided into 13 subcategories) weighted by importance to the household and summed to create a household indicator from 0 to 9.5. See NORC (August 2013), “Kenya Municipal Program State of the Cities: Overview Report” for a more detailed description.
- *Household Poverty* – The poverty line varies depending on the number of members of the household and their age. It is calculated by adding together:
  - 5,567 KSh per month for each adult 15 years and older in household,
  - 3,619 KSh per month for each child aged 5 to 14 in household,
  - 1,336 KSh per month for each child under 5 years old in household.



# HOUSEHOLD CHARACTERISTICS

This section presents basic household characteristics. Table A.1 provides information on household size and household member distribution by age category. Table A.2 details the level of education of the members of household, as well as the proportion of children and adults of different ages who were currently in school at the time of the survey. Finally, Table A.3 presents household health characteristics, including the proportion of children under 15 who have received the BCG vaccine (an immunization against tuberculosis), a major public health concern given that Kenya is a high-tuberculosis-burden country.<sup>9</sup> Table A.3 also includes the number of household members with an illness or injury in the two weeks prior to the survey, the proportion of those members who visited a health practitioner, average household medical expenditures for the month preceding the survey, and the percentage of households that have health insurance. All of these figures are given comprehensively and broken down by location type, the household's poverty status, and the gender of head of household (among informal areas).

## A.1 Household Demographic Composition

The 2009 census estimated that the municipality of Garissa had a population of 116,317, a 68% increase over the figure reported in the 1999 census; this represents a 5.33% annualized average growth rate.<sup>10</sup>

We surveyed 1,032 households in Garissa, only 20 of which were located in informal areas. Note that the small number of interviews completed in informal settlements means that the figures presented in the tables for informal areas are not likely to be highly accurate. This also includes the figures for male- and female-headed households in Garissa.

The average household size in Garissa, as reported by survey respondents, is 3.66 members. As indicated by the bold numbers, households are (statistically) significantly larger in informal areas by a full-member as compared to formal areas.

On average, about 70% of households' members are aged 15 to 60 years old; another 16.5% are between 5 and 14 years old, 12.4% are under 5 and about 1% are over 60. The head of household is male in 80% of all households, and this figure does not differ in a statistically significant way by area or poverty status. Nearly all (97%) female-headed households are located in formal areas and, perhaps surprisingly, nearly 60% of female-headed households are non-poor, i.e. given their household size they have monthly expenditures above the poverty line. There are significantly more senior citizens in informal areas than in formal areas (nearly 7% vs. only 1%) and in poor households than in non-poor households.

<sup>9</sup> World Health Organization Global tuberculosis report 2012, retrieved June 12<sup>th</sup> 2013 from [http://www.who.int/tb/publications/global\\_report/en/](http://www.who.int/tb/publications/global_report/en/)

<sup>10</sup> From Statistical Abstract 2010 and Statistical Abstract 2006, Kenya National Bureau of Statistics.

**Table A.1: Household demographic characteristics**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of households:							
Weighted	14,954	258	14,696	7,076	7,878	175	83
N (unweighted)	1,032	20	1,012	493	539	14	6
Size of household	3.66	<b>4.73</b>	<b>3.64</b>	3.57	3.74	5.05	4.06
N	1,032	20	1,012	493	539	14	6
Mean percent of household members aged:							
Total	100	100	100	100	100	100	100
Under 5	12.4	7.3	12.5	13.3	11.5	10.7	0.0
5 to 14	16.5	24.0	16.3	15.4	17.5	23.1	26.0
15 to 60	69.8	62.0	70.0	69.3	70.3	63.7	58.5
Over 60	1.2	<b>6.7</b>	<b>1.1</b>	<b>1.9</b>	<b>0.5</b>	2.6	15.6
N	1,032	20	1,012	493	539	14	6
Proportion of households...							
Male-headed	80	68	81	82	79		
Female-headed	20	32	19	18	21		
N	998	20	978	474	524		
Female-headed distribution		3	97	42	58		
N		197	197				

## A.2 Household Education Characteristics

Garissa was part of the North Eastern Province, where, in 2009, primary classrooms had an average class size of 45 students and secondary classrooms had on average 33 students. Average student-teacher ratios in the former North Eastern Province were 64.4 for primary schools and 23.6 for secondary schools.<sup>11</sup>

The first panel of Table A.2 presents statistics on the education of all individuals aged 5 years and older within the surveyed households. Only 37% of individuals over 5 have completed primary or higher. The percent having “no education” is high at 30%, and remains at this high level across all categories. Almost no households in informal areas reported having higher education while 8% in formal areas reported having some, and the difference was significant. A significantly higher percentage of household members in non-poor households also reported having completed secondary or some higher education than in poor households. In informal areas, there were no statistically significant differences education levels of over 5 individuals between male and female-headed households.

The second panel of the table shows the mean percent of adult individuals over 18 years within each household. This is done to show intra-household educational levels among households’ adult members. We find that within the average Garissa household, only about half of the adults have completed primary or higher, 15.4% have some primary, and the remaining 30% have no education at all. In informal areas, over 50% had no education, which was significantly higher than in formal areas. Similar to the first table,

<sup>11</sup> Provinces no longer exist in Kenya. This data is based on the Kenyan Institute for Public Policy Research and Analysis 2009 Economic Report, Table A3.16, pg. 192, per Ministry of Education statistics, [http://www.marsgroupkenya.org/pdfs/2009/10/Kenya\\_Economic\\_Report\\_2009.pdf](http://www.marsgroupkenya.org/pdfs/2009/10/Kenya_Economic_Report_2009.pdf) Section

almost no households in informal areas reported having higher education while 14.3% in formal areas reported having some, and the difference was significant. A significantly higher percentage of household members in formal areas also reported having completed secondary than in informal areas (61.1% in formal vs. 5.6% in informal). A significantly higher percentage of household members in non-poor households reported having completed secondary or some higher education than in poor households (about 36% vs. about 23%), while a significantly larger percentage of the poor have some primary as highest grade completed as compared to the non-poor (21.6% vs. 9.8%). In informal areas, there were no statistically significant differences in adult education levels within households between male and female-headed households.

Seventy-eight percent of individuals aged 5 to 14 years old are currently in school; this figure is 67.5% for individuals 15 to 18 and 9% for individuals over 18 (however, over 18 also includes those who have completed their schooling). The percentage of individuals over 18 that is currently in school is significantly higher among non-poor households than poor households (10.9% vs. 6.8%).

**Table A.2: Household education characteristics**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of individuals 5 and older with highest grade completed:							
Total	100	100	100	100	100	100	100
None	30	40	30	32	29	32	58
Some Primary	33	29	33	<b>35</b>	<b>31</b>	36	13
Completed primary	11	16	11	11	11	14	22
Some secondary	7	10	7	6	8	11	8
Completed secondary	11	5	11	<b>9</b>	<b>12</b>	8	0
Higher	8	<b>0</b>	<b>8</b>	<b>6</b>	<b>10</b>	0	0
N	3,095	79	3,016	1446	1649	56	23
Mean percent of household's adults over 18 with highest grade completed:							
Total							
None	36.0	<b>52.5</b>	<b>35.7</b>	36.2	35.7	50.2	57.5
Some Primary	15.4	12.3	15.5	<b>21.6</b>	<b>9.8</b>	14.7	7.4
Completed primary	13.6	22.6	13.5	14.1	13.3	20.2	27.7
Some secondary	4.2	6.0	4.2	4.2	4.2	5.3	7.4
Completed secondary	15.9	<b>5.6</b>	<b>16.1</b>	<b>12.4</b>	<b>19.0</b>	8.2	0.0
Higher	14.0	<b>0.0</b>	<b>14.3</b>	<b>10.5</b>	<b>17.2</b>	0.0	0.0
N	1,031	20	1,011	493	538	14	6
Percent of individuals in school by age group:							
5 to 14	78.0	<u>72.0</u>	<u>78.1</u>	<u>75.4</u>	<u>80.2</u>	97.3	28.5
N	429	<u>12</u>	<u>417</u>	<u>203</u>	<u>226</u>	8	4
15 to 18	67.5	<u>50.5</u>	<u>68.0</u>	<u>62.6</u>	<u>71.0</u>	55.1	34.9
N	210	7	203	92	118	5	2
Over 18	9.0	3.5	9.1	<b>6.8</b>	<b>10.9</b>	5.2	0.0
N	1,029	20	1,009	493	536	14	6

### A.3 Household Health Profile

Garissa was part of North Eastern Province, which in 2005 had an average of 8.9 doctors and clinical officers per 100,000 residents and 31.5 nurses per 100,000 residents.<sup>12</sup> The former North Eastern Province had 5.7 medical facilities per 100,000 residents, including hospitals, clinics, dispensaries, and other types of facilities.<sup>13</sup>

Overall, 91% of households' children under 15 have received BCG (tuberculosis) immunizations. Sixteen percent of households reported having a sick or injured household member in the two weeks prior to the interview, a number which is significantly higher among non-poor households than poor households. Seventy-two percent of these visited a health practitioner. Households reported spending an average of 1044 KSh on medical costs in the previous month, although it was much lower in informal areas (290 KSh) than in formal (1057 KSh), and medical expenses were also lower among the poor (496 Ksh) vs. the non-poor (1559 KSh); both differences were significant. Overall average rates of health insurance coverage are quite low (9%). As indicated by the underlined figures, tests for significant differences between categories could not be performed for much of the table.

**Table A.3: Household health characteristics**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of household's children under 15 having received BCG immunization	91	99	90	88	93	98	100
N	604	13	591	294	310	9	4
Percent of households with an injured/ill member, previous two weeks	16	12	16	13	19	8	22
N	1,032	20	1,012	493	539	14	6
Percent of ill household members that visit a health practitioner, previous two weeks	72	61	72	70	73	100	33
N	155	2	153	62	93	1	1
Household medical expenditures (KSh), previous month	1,044	290	1,057	496	1,559	426	0
N	1,004	20	984	491	513	14	6
Percent of households with health insurance	9	0	9	5	13	0	0
N	1,032	20	1,012	493	539	14	6

<sup>12</sup> 2004/2005 numbers of healthcare providers obtained from Partners for Health Reform plus 2006 Report, Table A1, pg. 39, Annex A, statistics obtained from Rep. of Kenya. [www.healthsystems2020.org/files/1654\\_file\\_Tech101\\_fin.pdf](http://www.healthsystems2020.org/files/1654_file_Tech101_fin.pdf). Per capita figures calculated by dividing by 2005 (estimated) population obtained from the Kenya Integrated Household Budget Survey, Table 3.1, [http://www.knbs.or.ke/pdf/Basic%20Report%20\(Revised%20Edition\).pdf](http://www.knbs.or.ke/pdf/Basic%20Report%20(Revised%20Edition).pdf).

<sup>13</sup> Based on most current (undated) figures from Kenya Bureau of Statistics Open Kenya online database, <https://kenya.socrata.com/Health-Sector/Health-Facility-Pie-Chart/yre4-763w>. Per capita figures calculated by dividing by 2009 census population, obtained from 2010 Statistical Abstract, Kenya National Bureau of Statistics.

# HOUSEHOLD ECONOMIC PROFILE

## B.1 Household Occupational Composition

Table B.1 presents the current occupation, or main activity, of household members. The first panel shows the percent of all adults over 18 in each of the occupations. The most prominent occupation categories are casual employee, regular employee, homemaker, and student, which together comprise about 77% of all adults in Garissa over 18 years old. The percent of unemployed looking for work is 8.5%. It is relatively high at 26% in informal areas, a significant difference from formal areas (8%); in informal areas, the percent sick/unable to work is also significantly higher (8% vs. almost none in formal areas). In Garissa, the percent of homemakers is high at 35.2%, and is even higher among the poor (37.8%), a significant difference from the non-poor (32.8%). Self-employment or being an employer is rare at only 3.9% and 2%, respectively; these percentages are slightly and significantly higher among the non-poor as compared to the poor. The percent of casual employees is significantly higher in formal areas vs. informal areas, and among poor vs. non-poor. Individuals in non-poor households are significantly more likely to be regular employees or students than individuals in poor households, and are significantly less likely to be homemakers.

The second panel shows the average percent of adults over 18 within each household that are occupied in each of the categories. This is done to show intra-household occupational status among households' adult members. The results here are similar to those in the first panel above. Here, we find that on average, about 74% of a household's adult members are regular employees, casual employees, or homemakers. About 7.5% are unemployed but looking for work, 6% are students, and 3.7% are unemployed but not currently looking for work. The percent of unemployed looking for work is relatively high at 27% in informal areas, a significant difference from formal areas (7.2%); in informal areas, the percent sick/unable to work is also significantly higher (4.4% vs. almost none in formal areas). In Garissa, the percent of homemakers is high at 35.2%, and is even higher among the poor (38.5%), a significant difference from the non-poor (32.2%). Self-employment or being an employer is rare at only 3.6% and 2.2%, respectively. The percent of regular employees is significantly higher within formal area vs. informal area households' adults, and within non-poor vs. poor households. Individuals in poor households are significantly more likely to be casual employees or homemakers than individuals in non-poor households, and are significantly less likely to be homemakers.

**Table B.1: Household members' main activity**

Occupation <sup>a</sup>	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of adults over 18 with occupation:							
Employer	2.0	1.0	2.1	1.0	3.0	1.5	0.0
Regular employee	14.1	7.9	14.2	10.9	17.0	7.9	8.1
Casual employee	20.8	6.5	21.2	23.6	18.2	9.7	0.0
Self-employed	3.9	4.7	3.9	2.8	4.9	1.5	11.3
Unpaid family worker	1.2	0.0	1.2	1.4	0.9	0.0	0.0
Apprentice	0.5	0.0	0.5	0.7	0.3	0.0	0.0
Student	7.2	2.6	7.3	5.5	8.8	3.9	0.0
Pensioner/investor	0.9	0.0	0.9	0.9	0.8	0.0	0.0
Earning from investments/ property	0.3	0.0	0.3	0.2	0.3	0.0	0.0
Sick/unable to work	0.6	7.9	0.4	1.1	0.1	7.9	8.1
Unemployed looking for work	8.5	26.0	8.1	8.0	9.0	26.9	24.3
Unemployed, not looking for work now	4.7	9.9	4.5	5.7	3.7	3.9	22.1
Homemaker	35.2	33.3	35.3	37.8	32.8	36.7	26.2
N	2,053	50	2,003	1005	1048	35	15
Mean percent of household's adults over 18 with occupation: <sup>(b)</sup>							
Employer	2.2	0.9	2.2	1.1	3.2	1.4	0.0
Regular employee	15.6	5.1	15.8	11.6	19.2	5.0	5.5
Casual employee	23.0	10.7	23.2	25.6	20.7	15.7	0.0
Self-employed	3.6	4.5	3.6	2.7	4.4	2.0	9.9
Unpaid family worker	1.0	0.0	1.1	1.4	1.4	0.0	0.0
Apprentice	0.5	0.0	0.5	0.6	0.3	0.0	0.0
Student	5.9	1.0	5.9	4.5	7.0	1.5	0.0
Pensioner/investor	0.8	0.0	0.8	1.0	0.5	0.0	0.0
Earning from investments/ property	0.5	0.0	0.5	0.4	0.5	0.0	0.0
Sick/unable to work	0.4	4.4	0.3	0.6	0.2	3.0	7.4
Unemployed looking for work	7.5	27.0	7.2	7.3	7.7	29.3	22.2
Unemployed, not looking for work now	3.7	8.8	3.6	4.4	3.1	3.5	20.2
Homemaker	35.2	36.5	35.1	38.5	32.2	37.2	34.9
N	1,031	20	1,011	493	538	14	6

Notes:

a. The category "Other" has been omitted.

b. These numbers are obtained by first computing the percentages of each household's members in each category, and then taking the mean of these percentages over all households.

## B.2 Household Income/Expenditure Levels

There are two general approaches to measure spending power: expenditure and income, both of which are shown in the tables below. In the survey, income derives from household members' salaries, business earnings, rents, public cash support, and earnings from financial assets in the month prior to the interview, but not remittances. Expenditures include all purchases, including investments for household-owned businesses. In theory, both approaches express the same amount of spending power, but typically one approach is not enough, especially when estimations are based on survey data, because survey respondents' perceptions about their income and expenditures can be unreliable; estimates vary depending on seasonal changes in economic activities, type of assets owned, household's cash flows, and in-kind payments.

In practice, the expenditure approach is usually more accurate because most respondents, making purchases daily, recall their expenses better. Income, on the one hand, can be problematic because it can be subject to respondent misreporting (e.g., desire to impress the enumerator) and, with non-wage income; respondents do not generally make a clear distinction between revenue (sales) and income (revenue minus expenses). Using both methods, therefore, provides an additional level of verification.

Just under half (47%) of all households have monthly expenditures below the poverty line, as determined by the household composition. This proportion is significantly higher in informal areas (however, recall that there were only 20 observations in informal areas). Poverty is significantly lower when the household has a water connection or the head of household works either in a "skilled" vs. an "unskilled" profession.

Almost 80% percent of households in Garissa reported expenditures or income levels and between 9,001-75,000 KSh per month. There were more significant differences by income than expenditure. Low-level incomes of less than 3,000 KSh per month were significantly more common in informal areas than in formal areas. Higher level incomes (between 31,000 and 75,000 KSh) are significantly more common in formal areas than informal areas; in households with tenure, water, or a business (for income only) than those without tenure, water, or a business; and in households where the head is in a skilled profession rather than an unskilled position. As indicated by italics, the entire distributions of incomes and expenditures also vary significantly depending on tenure status, water connection, business ownership, and whether the household head is skilled. On average, households who sent money to individuals outside their household sent around 13,160 KSh in the three months prior to the interview; households receiving 19,812 on average in the same period. On average, households sent more money than they received. Among the lowest expenditure levels, transfers were least common (6% of households) and remittances were most common (34%).

**Table B.2a Monthly household spending power, as measured by expenditure**

Characteristic	All	Location		Household has...			Household head is <sup>c</sup>		Gender (Informal)		Value of transfer (row pct.) <sup>d</sup>
		Informal areas	Formal areas	Tenure <sup>a</sup>	Water connection	A business <sup>b</sup>	Skilled	Unskilled	Male-headed	Female-headed	
Percent of HHs below poverty line	47	<b>87</b>	<b>47</b>	50	<b>64</b>	38	<b>33</b>	<b>52</b>	92	78	
N	1,032	20	1,012	295	320	56	248	784	14	6	
Mean expenditure (monthly KSh)	22,624	<b>16,888</b>	<b>22,724</b>	<b>29,678</b>	20,597	<b>29,317</b>	<b>27,238</b>	<b>21,154</b>	15,804	19,197	
N	1,032	20	1,012	295	320	56	248	784	14	6	
Percent of households with expenditure: <sup>d</sup>											
Less than 3,000 KSh	3	5	3	<b>1</b>	<b>6</b>	2	2	4	8	0	2,000 (6%)
3,001-6,000 KSh	7	8	7	5	<b>12</b>	3	4	8	12	0	4,332 (11%)
6,001-9,000 KSh	9	15	9	8	12	6	6	10	12	22	3,083 (21%)
9,001-30,000 KSh	17	21	17	<b>9</b>	13	7	15	17	15	33	6,358 (16%)
13,001-18,000 KSh	17	17	17	16	15	9	15	18	14	22	6,392 (19%)
18,001-30,000 KSh	24	14	25	26	25	<b>40</b>	27	24	21	0	5,063 (21%)
31,001-75,000 KSh	19	19	19	<b>28</b>	<b>14</b>	30	<b>25</b>	<b>17</b>	18	22	10,351 (30%)
Above 75,000 KSh	3	0	3	<b>6</b>	3	3	<b>5</b>	<b>2</b>	<u>0</u>	<u>0</u>	41,885 (19%)
N	1,032	20	1,012	295	320	56	248	784	14	6	211
Cash transfers <sup>e</sup>	13,160	0	<u>13,160</u>	<u>2,629</u>	<u>3,138</u>	<u>6,487</u>	<u>30,076</u>	<u>5,073</u>	<u>0</u>	<u>0</u>	
N	189	6	183	59	48	7	18	171	3	3	

**Notes:**

- a. Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
- b. "Business" refers to a self-employed activity that may or may not entail household or wage employees.
- c. Includes those self-declared as "skilled" as well as "professional".
- d. An imputed 30-day value from responses over several periods (7 days for food, 30 days for other consumables, 12 months for durables and annual services). See Volume I of the Overview Report. No significance test performed on this column.
- e. Transfers are cash outflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

**Table B.2b: Monthly household spending power, as measured by income**

Characteristic	All	Location		Household has...			Household head is <sup>c</sup>		Gender (Informal)		Value of remittance (row pct.) <sup>e</sup>
		Informal areas	Formal areas	Tenure <sup>a</sup>	Water connection	A business <sup>b</sup>	Skilled	Unskilled	Male-headed	Female-headed	
Proportion of households with income: <sup>d</sup>											
Less than 3,000 KSh	2	12	2	2	4	0	1	3	18	0	25,846 (34%)
3,001-6,000 KSh	5	8	5	7	4	0	0	7	8	9	17,713 (6%)
6,001-9,000 KSh	14	13	14	14	6	5	4	17	12	16	17,749 (16%)
9,001-30,000 KSh	17	28	17	14	17	20	13	18	26	31	19,717 (16%)
13,001-18,000 KSh	16	20	16	13	16	16	18	15	19	22	18,920 (9%)
18,001-30,000 KSh	27	19	27	23	26	27	34	25	18	22	16,910 (24%)
31,001-75,000 KSh	17	0	17	24	23	27	25	14	0	0	23,254 (13%)
Above 75,000 KSh	2	0	2	3	3	5	4	1	0	0	19,506 (16%)
N	1,005	20	985	287	319	56	247	758	14	6	166
Cash remittances <sup>e</sup>	19,812	4,713	20,390	22,443	22,638	18,152	12,858	20,481	5,333	3,935	
N	189	6	183	59	48	7	18	171	3	3	

Notes:

- Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
- "Business" refers to a self-employed activity that may or may not entail household or wage employees.
- Includes those self-declared as "skilled" as well as "professional".
- Total household cash income in KSh, previous month, not including in-kind income or cash assistance from/to family or friends who live outside the household. No significance test performed on this column.
- Remittances are cash inflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

### B.3 Household Wealth Composition

The "household wealth index" is calculated from the household's declared ownership of a list of common household items. The value itself is created by totaling the estimated value of each item (indicated in brackets, in USD), converting to KSh, and dividing by 1,000; so the average of 19.9 means that the average household owned approximately 19,900 KSh worth of listed possessions. However, since each possible possession was only counted once, this should not be taken as a reliable estimate, but rather a unitless index of comparison.

Non-poor households score significantly higher on this index than poor households, and higher percentages of non-poor households report holdings of nearly all types of goods. The index scores do not differ significantly by area type or gender of household head. There are, however, significantly higher holdings in formal areas vs. informal areas in Class-1 durables, entertainment equipment, and motorized transport, although almost no households have motorized transport. Naturally, informal areas have higher holding of farm animals.

Home values are relatively concentrated, although 154 owned their residence and land at an average value of 4.5 million KSh. However, the high number of missing or don't know responses to this question means that the averages shown are drawn from a relatively small group and tests of statistical significance were not possible.

**Table B.3: Household wealth composition**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Index of household wealth <sup>a</sup>	19.9	22.8	19.8	17.5	22	20.4	27.8
N	1,032	20	1,012	493	539	14	6
Household's average holdings of:							
Class-1 durables (furniture, pans, iron, mosquito net) [7]	5	<b>3.8</b>	<b>5</b>	<b>4.5</b>	<b>5.4</b>	3.7	3.8
Class-2 durables (stove, sewing machine, fan, wheelbarrow, water storage tank) [60]	0.6	0.7	0.6	<b>0.5</b>	<b>0.7</b>	0.4	1.3
Class-3 durables (refrigerator, washing machine, electric generator, bicycle) [100]	0.2	0.3	0.2	<b>0.1</b>	<b>0.2</b>	0.5	0
Farm animals (poultry and livestock) [200]	0.1	<b>0.5</b>	<b>0.1</b>	<b>0.1</b>	<b>0</b>	0.4	0.8
Entertainment equipment (radio, TV, satellite dish, DVD, video player) [80]	1.4	<b>0.8</b>	<b>1.4</b>	<b>1.2</b>	<b>1.6</b>	0.8	0.7
Motorized transport (motorcycle [400], car [1,000])	0.0	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<u>0</u>	<u>0</u>
N	1,032	20	1,012	493	539	14	6
Value of primary residence, not its land (in 1,000 KSh) <sup>b</sup>	43.8	-	<u>43.8</u>	<u>42.8</u>	<u>50.0</u>	-	-
N	7	0	7	6	1	0	0
Value of primary residence and its land (in 1,000 KSh) <sup>b</sup>	4,509	<u>3,315</u>	<u>5,977</u>	<u>3,315</u>	<u>5,977</u>	1,619	11,071
N	154	19	135	87	67	13	6
Value of other land and/or residence (in 1,000 KSh) <sup>c</sup>	1,266	-	<u>1,266</u>	<u>172</u>	<u>1,966</u>	-	-
N	8	0	8	4	4	0	0

**Notes:**

1. This is a class-weighted average of the number of items as disaggregated in this same table, multiplied by the weight given within the square brackets [].
2. About 84% of the sample had missing values for this amount, though at about the same frequency across the categories of this table. About half the sample that declared owning land or a residence failed to report its value. Averages are only over households with the asset. See "Proportion of Owners" in Table C.1. Note that values in the last three rows of the table are divided by one thousand.
3. Since the survey does not ask the value of these, they have been imputed as a percent of primary residence value where it was declared (see Footnote (c)). These imputations are: land in city (10%), land outside city (5%), residence only in city (40%), and residence only outside of city (28%). If household has both land and structure these are scored separately and added together. In the case where the land of primary residence is not owned the value of the residence is first doubled before the imputations are made.

## B.4 Household Finance

Around 42% of all households in Garissa have a bank account, a number that is significantly higher among non-poor households compared to poor households. The percentage of households with loans is extremely low at 2%, although bank loans were significantly higher among non-poor households compared to poor households (2% vs. 0%). Consistent with findings mentioned above, more households (21%) sent money to people not living at the household than received money (18%). Households in informal areas were significantly more likely to have households receiving cash than formal areas, while formal area households were much more likely to send cash than informal area households (21% vs. 7%). Significantly fewer poor households send money than non-poor households.

**Table B.4: Household finance**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with a bank account	42	34	42	35	49	18	67
N	1,032	20	1,012	493	539	14	6
Percent of households with a loan	2	0	2	1	3	0	0
N	1,032	20	1,012	493	539	14	6
Percent of households with a loan from a...							
Bank	1	0	1	0	2	18	67
Microfinance institution	0	0	0	0	0	0	0
Savings/credit group or co-op	0	0	0	0	1	0	0
Relative/friend	1	0	1	1	0	0	0
Informal lender	0	0	0	0	0	0	0
N	1,032	20	1,012	493	539	14	6
Percent of households receiving cash from those not now living at residence <sup>a</sup>	18	38	18	18	19	31	53
N	1,032	20	1,012	493	539	14	6
Percent of households sending cash to those not now living at residence <sup>a</sup>	21	7	21	14	27	0	22
N	1,032	20	1,012	493	539	14	6

Notes:

a. Over the previous twelve months.

## B.5 Household-owned Business Profile

Only 6% of households own a business, most of which (91%) engage in some form of selling. These businesses tend to be fairly new and quite small, as the average age for a business is one year and the average number of employees is between about two—and they are household members in half of the cases. Nearly all businesses are registered either with a local authority (65%) or not at all (33%), and about 40% pay a daily market fee while another 40% pay a single business permit fee; only 8% pay VAT (value-added tax). The relatively low number of businesses means that it is not possible to perform tests of statistical significance for most of Table B.5.

**Table B.5: Household-owned business profile**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of household with business ownership, last 12 months	6	7	6	4	7	0	22
N	1,032	20	1,012	493	539	14	6
Type of business: <sup>a</sup>							
Manufacturing	5	<u>0</u>	<u>5</u>	<u>12</u>	<u>0</u>	-	<u>0</u>
Selling	91	<u>100</u>	<u>91</u>	<u>88</u>	<u>94</u>	-	<u>100</u>
Transport	5	<u>0</u>	<u>5</u>	<u>0</u>	<u>8</u>	-	<u>0</u>
Professional (including Internet)	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-	<u>0</u>
Other (barber, cleaning, etc.)	4	<u>0</u>	<u>4</u>	<u>0</u>	<u>7</u>	-	<u>0</u>
N	56	1	55	22	34	0	1
Years in operation	1	<u>0.2</u>	<u>1</u>	<u>0.9</u>	<u>1</u>	-	<u>0.2</u>
N	55	1	54	22	33	0	1
Number of employees	2.2	4	<u>2.2</u>	<u>2.6</u>	<u>2</u>	-	<u>4</u>
N	56	1	55	22	34	0	1
Which are...							
Household members	1.1	<u>2</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	-	<u>2</u>
N	56	<u>1</u>	<u>55</u>	<u>22</u>	<u>34</u>	0	<u>1</u>
Non-household members	1.2	<u>2</u>	<u>1.2</u>	<u>1.5</u>	<u>1</u>	-	<u>2</u>
N	54	1	53	22	32	0	1
Revenue in previous month <sup>b</sup>	58,839	<u>3,000</u>	<u>60,337</u>	<u>28,197</u>	<u>83,920</u>	-	<u>3,000</u>
N	48	1	47	22	26	0	1
Registration status:							
Local authority (municipal or city council)	65	<u>100</u>	<u>64</u>	<u>59</u>	<u>68</u>	-	<u>100</u>
Kenya Revenue Authority	7	<u>0</u>	<u>7</u>	<u>5</u>	<u>8</u>	-	<u>0</u>
Registrar of Companies	2	<u>0</u>	<u>2</u>	<u>0</u>	<u>4</u>	-	<u>0</u>
None of the above	33	<u>0</u>	<u>34</u>	<u>36</u>	<u>32</u>	-	<u>0</u>
N	56	1	55	22	34	0	1
Share of businesses making fiscal contributions:							
Daily market local fee	39	<u>0</u>	<u>39</u>	<u>32</u>	<u>42</u>	-	<u>0</u>
Single business permit local fee	41	<u>100</u>	<u>39</u>	<u>42</u>	<u>40</u>	-	<u>100</u>
Value Added Tax	8	<u>0</u>	<u>9</u>	<u>0</u>	<u>13</u>	-	<u>0</u>
N	56	1	55	22	34	0	1

**Notes:**

- a. Households were allowed to choose more than one category so these figures may exceed 100%.  
b. Average over only those businesses operating over the period.

## PART C: DWELLING TENURE, SECURITY, AND CHARACTERISTICS

### C.1 Household Dwelling Characteristics

On average, households in Garissa have 2.5 people per room, a ratio that significantly differs by area type and household poverty. Households have less than one bathroom on average, and it is significantly lower in informal areas. Thirty-nine percent of households have a kitchen; this proportion is actually significantly higher among poor households than poor households (47% vs. 32%).

Most households in Garissa cook with charcoal (90%). In informal areas a significantly higher percentage (34%) of households uses firewood, while a significantly lower percentage uses charcoal. Five percent of non-poor households use gas vs. 1% of poor, and the difference is significant.

The majority of households are renters (71%), with 28% owning their land and structure; ownership is significantly higher and nearly universal in informal areas at 93%. Regarding natural and manmade hazards, fully 41% of households report that the area around their dwelling floods during heavy rains, 20% say they live within a ten-minute walk of a formal or informal garbage dump, but only 5% say they are susceptible to mudslides and only 4% state that they are exposed to factory pollution in their neighborhood. The percentage reporting living near a garbage dump is significantly higher in informal than in formal settlements (67% vs. 19%) and among the poor than the non-poor (26% vs. 13%).

Quality of housing varies widely and significantly across location. Fully 65% percent of households in informal areas have an earth or clay floor, compared to 7% of those in formal areas—a significant difference. Almost all households have an iron or grass roof in formal areas, while only 72% do in informal areas, and almost all households also have stone or brick walls in formal areas, while only 35% do in informal areas. Both of these are significant differences.

**Table C.1: Household dwelling characteristics**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of persons per room	2.5	<b>3.7</b>	<b>2.5</b>	<b>2.7</b>	<b>2.3</b>	3.8	3.4
N	1,030	20	1,010	492	538	14	6
Number of bathrooms	0.7	<b>0.2</b>	<b>0.7</b>	0.8	0.7	0.2	0.2
N	1,032	20	1,012	493	539	14	6
Proportion of residences with kitchen	39	38	39	<b>47</b>	<b>32</b>	35	44
N	1,032	20	1,012	493	539	14	6
Primary cooking fuel:							
Electricity	1	0	1	1	1	<u>0</u>	<u>0</u>
Paraffin or kerosene	2	0	2	2	2	<u>0</u>	<u>0</u>
Gas	3	0	3	1	5	<u>0</u>	<u>0</u>
Charcoal	90	<b>63</b>	<b>90</b>	91	88	67	53

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Firewood	4	<b>34</b>	<b>4</b>	6	3	28	47
N	971	20	951	470	501	14	6
Proportion of households that:							
Total	100	100	100	100	100	100	100
Owns the land only	0	0	0	0	0	<u>0</u>	<u>0</u>
Owns structure only	1	0	1	<b>2</b>	<b>0</b>	<u>0</u>	<u>0</u>
Owns land and structure	28	<b>93</b>	<b>27</b>	29	27	90	100
Rents	71	<b>7</b>	<b>72</b>	68	73	10	0
Squats	0	0	0	0	0	0	0
N	1032	20	1,012	493	539	14	6
Pct. of households in areas subject to <sup>a</sup> :							
Flooding <sup>b</sup>	41	27	41	38	43	19	44
Mudslides <sup>c</sup>	5	5	5	5	6	8	0
10 minute walk to formal or informal garbage dump	20	<b>67</b>	<b>19</b>	<b>13</b>	<b>26</b>	73	56
Factory pollution (air, water, noise)	4	0	4	4	4	<u>0</u>	<u>0</u>
N	1,032	20	1,012	493	539	14	6
Housing quality:							
Pct. with earth/clay floor	8	<b>65</b>	<b>7</b>	<b>12</b>	<b>4</b>	69	56
Percent with corrugated iron roof	96	<b>45</b>	<b>97</b>	<b>94</b>	<b>98</b>	46	44
Percent with grass roof	2	<b>27</b>	<b>2</b>	<b>4</b>	<b>1</b>	23	33
Percent with stone/brick/block walls	91	<b>35</b>	<b>92</b>	<b>86</b>	<b>95</b>	31	44
N	1,032	20	1,012	493	539	14	6

**Notes:**

- a. All data is self-reported, and therefore subjective.
- b. Households reported that the area floods during heavy rains.
- c. Households reported that they are located on a hillside that is subject to mudslides.

## C.2 Home and Land Ownership

Most households are renters (71%), with 28% owning their land and structure. Seventy-seven percent of households owning their structure reported feeling secure in their ownership.

The majority of household owners (59%) reported having a freehold title for their land, while 31% reported no land possession documents whatsoever. Only one percent of households reported being evicted.

The bottom portion of Table C.2 focuses on neighborhood mobility. Households reported living an average of 7.1 years in their present dwelling, and about 7.7 years in their present neighborhood. On average, the small number of informal areas households reported living in the dwelling and neighborhood for 15.6 years—a significant different from formal area households. Perhaps surprisingly, poor households reported living in the dwelling significantly longer than poor households.

**Table C.2: Household residence and land tenure**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households that:							
Total	100	100	100	100	100	<u>100</u>	<u>100</u>
Own the land only	0	0	0	0	0	<u>0</u>	<u>0</u>
Own structure only	1	0	1	2	0	<u>0</u>	<u>0</u>
Own land and structure	28	93	27	29	27	90	100
Rent	71	7	72	68	73	10	0
Squat	0	0	0	0	0	<u>0</u>	<u>0</u>
N	1,032	20	1,012	493	539	14	6
Percent of households that feel secure in ownership							
Total	77	<u>97</u>	<u>76</u>	<u>78</u>	<u>77</u>	95	100
N	295	19	276	149	146	13	6
Variability of households feeling secure <sup>a</sup>							
Total	0.03	0.05	0.03	0.08	0.06	0	0
N	295	19	276	149	146	13	6
Percent of households that experienced eviction							
Total	1	0	1	0	1	<u>0</u>	<u>0</u>
N	1,032	20	1,012	493	539	14	6
Proportion of household owners by type of land-possession document:							
Total	100	100	100	100	100	100	100
None	31	<u>15</u>	<u>32</u>	<u>47</u>	<u>15</u>	0	44
Freehold title	59	<u>85</u>	<u>57</u>	<u>44</u>	<u>74</u>	100	56
Temporary occupation license	0	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Share certificate	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Government certificate of title <sup>b</sup>	9	<u>0</u>	<u>9</u>	<u>9</u>	<u>8</u>	<u>0</u>	<u>0</u>
Letter from chief (provincial administration)	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other	1	<u>0</u>	<u>1</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>
N	306	19	287	155	151	13	6
Neighborhood mobility:							
Years in dwelling	7.1	<b>15.6</b>	<b>7.0</b>	<b>7.7</b>	<b>6.6</b>	<b>7.0</b>	<b>11.6</b>
N	1,032	20	1,012	493	539	1,012	14
Years in neighborhood	7.7	<b>15.6</b>	<b>7.6</b>	8.0	7.4	<b>7.6</b>	<b>11.6</b>
N	1,032	20	1,012	493	539	14	6
Home loan payment as a percent of spending power <sup>c</sup>							
Total	13	-	<u>13</u>	-	<u>13</u>	-	-
N	2	0	2	0	2	0	0

**Notes:**

- Computed as the intra-class correlation coefficient, where the "class" is the EA. This measures the extent to which households within an EA resemble each other in their feelings of security in ownership. No significance tests performed on this row.
- Long-term lease from City council/Government.
- Computed only for those with a housing loan.

### C.3 Distribution of Housing Values and Rents

The average home value was about 4.3 million KSh, but only 161 respondents reported home values and there were not enough responses at the census tract level to test for differences by area or other categories. Sixty percent of home values were between 9,000 and 2.5 million KSh, while the remaining 40% were more than 2.5 million KSh.

Average rent is 3,462 KSh per month, and about 60% of respondents reported rents between 2,000 and 3,400 KSh per month; almost all the remaining 40% had rents between 3,500 and 150,000 KSh per month, and only 5% had rents under 2,000 KSh per month. Although there were 714 respondents, there were not enough responses at the census tract level to test for differences by area or other categories.

**Table C.3: Distribution of housing values and rents**

Characteristic	All	Location		Household has...			Household head is <sup>c</sup>		Gender (Informal)	
		Informal areas	Formal areas	Tenure	Water connection	A business	Skilled	Unskilled	Male-headed	Female-headed
Average home value (1,000 KSh) <sup>a</sup>	4,327	4,871	4,263	4,509	5,169	2,982	6,387	3,953	1,619	11,071
N	161	19	142	154	69	6	25	136	13	6
Distribution of home values: Total	100	100	100	100	100	100	100	100	100	100
1-8,999 KSh	1	0	1	0	0	0	0	1	0	0
9,000-299,999 KSh	20	41	18	17	12	54	4	23	39	44
300,000-999,999 KSh	20	14	21	21	15	0	20	20	8	25
1,000,000-2,499,999 KSh	20	13	20	20	23	0	25	19	20	0
2,500,000-250,000,000 KSh	40	32	41	41	49	46	52	37	32	31
N	161	19	142	154	69	6	25	136	13	6
Average monthly rent (tenants) <sup>b</sup>	3,462	2,000	3,465	-	3,470	4,146	3,622	3,399	2,000	-
N	714	1	713		220	40	198	516	1	0
Distribution of monthly rents: Total	100	100	100		100	100	100	100	100	-
1-899 KSh	1	0	1		1	0	0	1	0	-
900-1,499 KSh	2	0	2		1	6	1	2	0	-
1,500-1,999 KSh	2	0	2		0	4	1	2	0	-
2,000-3,499 KSh	59	100	59		60	44	53	61	100	-
3,500-150,000 KSh	37	0	37		38	46	45	34	0	-
N	714	1	713		220	40	198	516	1	0

Notes:

- Self-reported, current, monthly, fair-market price (response to the question, "If you were to sell your house, how much do you think you could sell it for?").
- Excludes imputed owner-occupied rents.
- Includes those self-declared as "skilled" as well as "professional".

## C.4 Neighborhood Social Capital and Civic Participation

Civic and social participation scores are fairly low for all measures in Garissa, and there are few significant differences for any category except infrastructure access. Only 12% of households overall report contacting a local council or attending a neighborhood forum; the percent contacting a local council is significantly higher for those in the upper half of infrastructure access vs. the lower half. In terms of election participation, only 21% participated in local elections, but about half of respondents reported voting in the 2007 election and the 2010 referendum. Those in the upper half of access are twice as likely to have voted in local elections as those in the lower half of access (26% vs. 13%), and the difference is significant. In the 2007 general elections and 2010 referendum, there are very slight but statistically significant differences in the percent voting by infrastructure access.

In terms of social activism, very few respondents (5%) reported that they had an informal community leader or that they had participated in a public demonstration (5%); and in households in the lower half of access to infrastructure, only 1% had participated in a public demonstration, a significant difference from upper half (6%).

The survey asked respondents whether people in their neighborhood would cooperate if asked by an official to conserve water or electricity because of an emergency, and whether people in their neighborhood look out for each other. On both questions, the results were positive. When asked if people in their community would cooperate if asked by an official, the results averaged 2.9 on a four-point scale (where 4="very likely" and 1="very unlikely" to cooperate). When respondents were asked if they agreed that people look out and trust each other in their neighborhood, answers averaged 3.4 on a five-point scale (where 1="strongly disagree" and 5="strongly agree"). On both questions, there were significant differences by location and access to infrastructure. Those in informal areas had higher trust scores than those in formal areas, as did those in the lower half of access to infrastructure vs. those in the upper half of access, although those in the upper half had higher scores on cooperation than those in the lower half of infrastructure access. Sixty-five percent of respondents said they felt safe in their own neighborhood. In informal areas, however, nearly all (95%) felt safe, and the difference from formal areas was significant, although only twenty respondents were from informal areas. The only statistically significant difference was by residents' access to infrastructure. In the upper half of infrastructure access, 70% of respondents felt safe in their own neighborhood compared to 56% of respondents in the lower half, and the difference was significant.

**Table C.4a: Neighborhood social capital and civic participation**

Characteristic	All	Location		Access to infrastructure <sup>a</sup>		Gender (Informal)		Tenure <sup>b</sup>	
		Informal areas	Formal areas	Lower half	Upper half	Male-headed	Female-headed	Own	Rent
Civic participation									
Percent of households contacting local council	12	27	12	9	14	12	61	12	12
N	1,032	20	1,012	375	657	14	6	304	728
attending a neighborhood forum	12	28	12	13	12	20	44	12	12
N	1,032	20	1,012	375	657	14	6	304	728
Social activism									
Percent of households voting in local election <sup>c</sup>	21	35	21	13	26	23	61	22	21
N	1,032	20	1,012	375	657	14	6	304	728
2007 general election <sup>c</sup>	51	40	51	51	51	26	69	56	49
N	1,032	20	1,012	375	657	14	6	304	728
2010 referendum <sup>c</sup>	49	32	49	49	49	26	47	52	47
N	1,032	20	1,012	375	657	14	6	304	728
Percent of households with informal community or neighborhood leader	5	22	5	5	5	12	44	10	3
N	1,030	20	1,010	374	656	14	6	303	727
Percent of households that took part in a public demonstration or protest	5	0	5	1	6	0	0	2	5
N	1,032	20	1,012	375	657	14	6	304	728

Notes:

- a. Defined by dividing the population in half based on a score assigned using responses from thirteen infrastructure-related questions (see Section 3 of Introduction).
- b. Alternatively, this could be the length of time living in the neighborhood: less/more than (say) 2 years.
- c. Out of all households and not just those registered to vote.

**Table C.4b: Neighborhood social capital and civic participation**

Characteristic	All	Location		Access to infrastructure <sup>a</sup>		Gender (Informal)		Tenure(b)	
		Informal areas	Formal areas	Lower half	Upper half	Male-headed	Female-headed	Own	Rent
<b>Social capital</b>									
Average household response to:									
People in my neighborhood cooperate if asked by an official <sup>(c)</sup>	2.9	2.9	2.9	2.7	3	3	2.8	2.8	2.9
N	1,032	20	1,012	375	657	14	6	304	728
People in my neighborhood look out for/trust each other <sup>(d)</sup>	3.4	3.8	3.4	3.8	3.4	3.8	3.8	3.4	3.4
N	1,032	20	1012	375	657	14	6	304	728
Proportion of HHs feeling safe from crime in own neighborhood	65	95	64	56	70	100	84	63	65
N	1,032	20	1,012	375	657	14	6	304	728

Notes:

- a. Defined by assigning scores using responses from thirteen infrastructure-related questions.
- b. Alternatively, this could be the length of time living in the neighborhood: less/more than (say) 2 years.
- c. Four-point scale where 1="Very unlikely" to 5="Very likely".
- d. Five-point scale where 1="Strongly disagree" to 5="Strongly agree".

## PART D: INFRASTRUCTURE SERVICES

### D.1a Water Access

Thirty percent of households have a private piped water connection in their dwelling. Interestingly, the proportion with a private piped water connection is significantly higher in poor households (40%) than in non-poor households (21%). Upon examining the most important water source by poverty status, we see that indeed, about 20% more of the non-poor use a shared tap than the poor. Nearly all households have a piped water connection in the compound, although among the small number surveyed in informal areas the percentage is significantly smaller (71%). Water access did not vary significantly by area type and respondents security in their home ownership, where “secure” represents owners who feel no one could force them to leave without an official legal process in which they would participate, “insecure” represents owners who feel they could be forced out, and “rent” represents those who rent their homes and therefore have no security of ownership as well as squatters and those who own their dwelling but not land.

On average, it takes respondents about 50 minutes per day to obtain water, including travel to and from the water source, waiting time, and filling time. Water costs an average of 1,801 KSh a month. There are large numerical differences in the cost of obtaining water in both time and money by location, poverty status, and gender of household head, but there was not enough data at the census tract level to test for statistical significance.

Only about one-quarter of respondents report that piped water is their most important water source; 69% of households report that a shared yard tap is their most important source of water, although, as discussed above, surprisingly, non-poor households rely more heavily on shared tap and less on piped water than the poorer households. Of the households that didn't have access to piped water, the main reason given (45%) was inability to afford the initial connection or inability to afford a monthly bill (28%). Only 13% said they were not connected because they were renting and their landlord would not pay for the connection.

**Table D.1a: Water access**

Characteristic	All	Security of Ownership <sup>a</sup>			Location		Household poverty		Gender (Informal)	
		Secure	Insecure	Rent	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with private piped water connection inside dwelling	30	33	26	30	20	30	40	21	8	44
N	1,032	229	66	737	20	1,012	493	539	14	6
Percent of households with piped water connection in compound	95	95	81	96	71	95	93	96	66	84
N	1,032	229	66	737	20	1,012	493	539	14	6
Percent of households close to piped water access <sup>b</sup>	84	75	92	83	54	87	81	88	66	0
N	44	11	10	23	6	38	28	16	5	1
Monthly cost of water in ... Time (minutes) <sup>c</sup>	348	322	293	388	190	368	216	585	221	51
N	46	11	11	24	6	40	29	17	5	1
Money (KSh)	1,801	1,891	1,785	1,354	2,063	1,786	1,503	2,047	1,634	2,956
N	271	187	48	36	17	254	125	146	12	5
Most important water source: Total	100	100	100	100	100	100	100	100	100	100
Piped	27	29	23	26	20	27	35	19	8	44
Bottled	0	0	0	0	0	0	0	0	0	0
Shared tap connection	69	67	57	71	52	69	59	78	57	39
Vendor (kiosk, tanker, other)	0	0	1	0	5	0	1	0	8	0
Neighbor(s)	3	4	15	1	23	3	3	2	27	16
Well/borehole	1	0	3	1	0	1	2	0	0	0
Natural source outside household	0	0	0	0	0	0	0	0	0	0
N	1,032	229	66	737	20	1,012	493	539	14	6
No connection due to:	100	100	100	100	100	100	100	100	100	100
Other sources available	5	0	0	11	0	6	0	15	0	0
Renting <sup>d</sup>	13	0	0	25	0	14	8	21	0	0
Can't afford connection	45	78	42	32	82	40	61	16	78	100
Can't afford monthly bill	28	13	50	23	0	32	20	42	0	0
Provider has waiting list	0	0	0	0	0	0	0	0	0	0
No service available	9	10	8	9	18	8	10	6	22	0
Other	0	0	0	0	0	0	0	0	0	0
N	44	11	10	23	6	38	28	16	5	1

**Notes:**

- Self-reported; "secure" includes owners who feel no one could force them to leave without an official legal process in which they would participate, "insecure" includes owners who feel they could be forced to leave without an official legal process, and "rent" includes renters, squatters, and people who own their structure but not land.
- Respondents were asked whether there were dwellings or businesses within 50 meters of their home that had a piped water connection in the dwelling or compound.
- Calculated as the sum of time spent travelling, waiting in line, and filling containers.
- House does not have a connection and landlord will not pay for one.

## D.1b Water Quality

Water quality rating distributions vary significantly within those using shared tap, wells/boreholes and neighbors, and also between the “good” and “fair” categories for the same. For the large number that rely on a shared tap, 75% rate their water quality as “good” and 23% rate it as “fair”—almost none rate it as “poor.” Forty-two percent of the households that obtain water from a neighbor and 60% of those using wells or boreholes rate their water quality to be fair.

All respondents purchase their water from a public utility. Only 19% of the households treat their water in any way; of those that treat water, most boil it (53%) or add bleach or chlorine (52%). More non-poor households treat (22%) than poor households (15%), and more of those who rate their water as “fair” treat (51%) than those who rate it as “good” (46%), and none of the 20 informal households treat their water; all differences are significant.

**Table D.1b: Water quality**

Characteristic	All	Household poverty		Location		Water quality				Gender (In-formal)		
		Poor	Non-poor	Infor-mal areas	For-mal areas	Good	Fair	Poor	Total	N	Male-head-ed	Fe-male-head-ed
Water source: <sup>a</sup>												
Piped	27	35	19	20	27	68	<u>31</u>	<u>2</u>	100	285	8	44
Bottled	0	<u>0</u>	<u>0</u>	0	0	-	-	-	-	0	0	0
Shared tap connection	69	<b>59</b>	<b>78</b>	52	69	<b>75</b>	<u>23</u>	<u>1</u>	100	701	57	39
Other vendor	0	1	0	<b>5</b>	<b>0</b>	40	<u>60</u>	<u>0</u>	100	5	8	0
Neighbor(s)	3	3	2	<b>23</b>	<b>3</b>	<b>52</b>	<u>42</u>	<u>6</u>	100	29	27	16
Well/Borehole	<b>1</b>	<b>2</b>	<b>0</b>	0	1	<b>5</b>	<u>60</u>	<u>35</u>	100	12	0	0
Natural outside-household source	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-	-	-	-	0	0	0
N	1,032	493	539	20	1012	735	278	19			14	6
Water provider:												
Public	100	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>73</u>	<u>26</u>	<u>1</u>	100	988	<u>100</u>	<u>100</u>
Private	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-	-	-	-	0	<u>0</u>	<u>0</u>
Self	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-	-	-	-	0	<u>0</u>	<u>0</u>
Community	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-	-	-	-	0	<u>0</u>	<u>0</u>
N	988	465	523	14	974	718	257	13			9	5
Percent of households treating drinking water	19	<b>15</b>	<b>22</b>	<b>0</b>	<b>19</b>	<b>46</b>	<u>51</u>	<u>3</u>	100	201	<u>0</u>	<u>0</u>
N	1,032	493	539	20	1,012	735	278	19			14	6
Treatment method: <sup>b</sup>												
Boiling	53	<u>75</u>	<u>40</u>	-	<u>53</u>	<u>50</u>	<u>47</u>	<u>3</u>	100	105	-	-
Add bleach/chlorine	52	<u>25</u>	<u>62</u>	-	<u>48</u>	<u>45</u>	<u>53</u>	<u>2</u>	100	96	-	-
Other (sieve, filter, settle)	3	<u>8</u>	<u>1</u>	-	<u>3</u>	<u>0</u>	<u>100</u>	<u>0</u>	100	8	-	-
N	201	80	121	0	201	95	101	5			0	0

Notes:

a. Most important water source.

b. Since multiple responses were permitted, the sum can exceed 100%. Likewise, “Other” is not shown, since it was negligible, so the sum may also be less than 100%.

## D.2a Electricity and Waste-Disposal Services

Fully 82% of respondents reported access to electricity, a figure that differs significantly by poverty (85% of non-poor vs. 78% poor) and settlement type (83% in formal vs. 7% in the twenty informal households). Reasons for not having a connection are similar to those for water—the primary reason reported was an inability to pay for the initial connection (48%) followed by an inability to pay the monthly bill (24%) and renting (24%). Almost no respondents reported functional street lighting in their area.

The average monthly bill for those with electricity is 2005 KSh a month, but fully 26% percent of households with electricity do not pay for it; although there are differences by poverty status, there were not enough observations at the census tract level to test for significance. Twenty-two percent of households experience outages on a weekly basis or more frequently.

Forty-three percent of all households reported getting rid of their refuse by dumping it in their neighborhood or compound, 39% burn it, 13% use a collection system and only 6% bury their garbage. Poor households are more likely to dump their garbage than non-poor households, while non-poor households are more likely to burn their garbage than poor households (both significant differences). The small number of informal households primarily burns their garbage (86%).

**Table D.2a: Access to electricity and waste-disposal**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Electricity							
Proportion of households with access to electricity	82	7	83	78	85	10	0
N	1,032	20	1,012	493	539	14	6
Reason for no connection: Total	100	100	100	100	100	100	100
Renters	24	<u>8</u>	<u>25</u>	<u>20</u>	<u>29</u>	12	0
Firm has waiting list	4	<u>0</u>	<u>4</u>	<u>5</u>	<u>3</u>	0	0
Cannot afford connection	48	<u>92</u>	<u>43</u>	<u>57</u>	<u>35</u>	88	100
Cannot afford monthly bill	24	<u>0</u>	<u>26</u>	<u>18</u>	<u>32</u>	<u>0</u>	<u>0</u>
Other	0	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>	0	0
N	188	19	169	112	76	13	6
Percent of households with mostly functioning street lighting	1	0	1	1	0	<u>0</u>	<u>0</u>
N	1,032	20	1,012	493	539	14	6
Average monthly bill, KShs	2005	<u>9000</u>	<u>1951</u>	<u>1619</u>	<u>2230</u>	<u>9000</u>	-
N	172	1	171	69	103	1	0
Percent of households not paying for electricity	26	<u>0</u>	<u>26</u>	<u>40</u>	<u>14</u>	0	-
N	228	1	227	108	120	1	0
Payment to: Total	100	100	100	100	100	100	-

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Utility	100	<u>100</u>	<u>100</u>	<u>99</u>	<u>100</u>	<u>100</u>	-
Prepaid card	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-
Landlord	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-
Third party (from utility power line)	0	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	-
N	172	1	171	69	103	1	0
Percent of households with outages at least once weekly	22	<u>0</u>	<u>22</u>	<u>14</u>	<u>28</u>	<u>0</u>	-
N	844	1	843	381	463	1	0
Refuse disposal							
Main method:							
Dumping	43	<b>14</b>	<b>43</b>	<b>56</b>	<b>30</b>	0	44
Burying	6	0	6	<b>4</b>	<b>8</b>	<u>0</u>	<u>0</u>
Burning	39	<b>86</b>	<b>38</b>	<b>28</b>	<b>48</b>	100	56
Collection system <sup>(a)</sup>	13	<b>0</b>	<b>13</b>	11	13	0	0
N	1,032	20	1,012	493	539	14	6
Proportion of households paying for collection	56	-	<u>56</u>	<u>30</u>	<u>76</u>	-	-
N	129	0	129	57	72	0	0

Notes:

a. Run by city, community, or private firm.

## D.2b Access to Sanitation Services

Only 9% of households reported that they have a toilet in their home. Most households use an individual pit latrine (76%) or a public latrine (21%); only 1% uses a flush toilet, even in formal areas. Non-poor households are much more likely to use an individual pit latrine while poor households are significantly more likely to use shared/public pit latrines. The majority of households (72%) share a toilet with several other families in formal areas. In the few informal households, most do not share toilets at all (72%). Most toilets (80%) drain into pits; 17% drain in to a legal sewer system, and few have a septic tank.

“Grey water” (waste water from washing, cleaning, etc.) is generally poured out into the road (88%); another 10% dump down the drain.

**Table D.2b: Access to sanitation**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with toilet in home	9	22	9	11	8	12	44
N	1,032	20	1,012	493	539	14	6
Type of toilet system: Total							
Pit latrine (individual)	76	<b>55</b>	<b>76</b>	<b>69</b>	<b>81</b>	52	62
VIP latrine	1	<b>7</b>	<b>1</b>	1	1	0	22
Flush toilet/WC	1	0	1	1	1	<u>0</u>	<u>0</u>
Public/shared latrine	21	<b>0</b>	<b>22</b>	<b>26</b>	<b>17</b>	<u>0</u>	<u>0</u>
Paid shared latrine	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
N	1,032	20	1,012	493	539	14	6
Percent of households sharing toilet:							
Doesn't share	19	<b>72</b>	<b>18</b>	21	18	62	91
Shares with 2-9 other households	71	<b>28</b>	<b>72</b>	72	70	38	9
Shares with 10+ other households	10	<b>0</b>	<b>10</b>	8	12	<u>0</u>	<u>0</u>
N	1,015	18	997	479	536	12	6
Type of disposal system for toilet:							
Total	100	100	100	100	100	100	100
Pit latrine	80	77	80	<b>74</b>	<b>85</b>	73	84
Sewer (legal)	17	<b>0</b>	<b>17</b>	<b>21</b>	<b>13</b>	<u>0</u>	<u>0</u>
Sewer (informal)	1	0	1	1	0	<u>0</u>	<u>0</u>
Septic tank/soak pit	2	0	3	<b>4</b>	<b>1</b>	<u>0</u>	<u>0</u>
N	1,019	18	1,001	482	537	12	6
Disposal of "grey water": Total							
Total	100	100	100	100	100	100	100
Dump into drain	10	7	10	12	8	0	22
Pour onto road	88	80	89	87	90	92	56
Pour into latrine	2	<b>13</b>	<b>2</b>	2	2	8	22
Other	0	0	0	0	0	0	0
N	1,031	20	1,011	493	538	14	6

### D.3 Access to Transport

More than half of all individuals (57%) work or study outside of their neighborhood. There were not enough observations at the census tract level to test for significant differences by category. Most individuals commute on foot (77%) and 16% commute via matatu.<sup>14</sup> One percent of non-poor households' members in drove to work or school in their own vehicle. The average one-way transport time to work or school is 22 minutes and the average one-way cost is 290 KSh.

Sixty-five percent of respondents said that their access to roads is good. Interestingly, the poor rate their access to roads as better than the non-poor, a significant difference. Seventeen percent of households have limited road access during the rainy season; here again, the poor rate their access to roads as better than the non-poor (only 7% of the poor say they have limited access vs. 26% of the non-poor).

<sup>14</sup> A "matatu" is a 14-seater minivan used throughout Kenya as a form of public transport.

**Table D.3: Access to transport**

Characteristic	All	Household activity <sup>a</sup>		Location		Household poverty		Gender (Informal)	
		Work	Study	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent who work or study...									
inside the neighborhood	57			<u>28</u>	<u>58</u>	<u>46</u>	<u>66</u>	23	40
outside the neighborhood	42			<u>72</u>	<u>41</u>	<u>53</u>	<u>33</u>	77	60
inside and outside the neighborhood	1			<u>0</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>
N	1,196			17	1,179	537	659	12	5
Main mode of travel <sup>(b)</sup>									
Walk	77	<u>48</u>	<u>85</u>	71	77	77	77	65	93
Bicycle	1	<u>0</u>	<u>0</u>	0	1	1	0	0	0
Own vehicle	0	<u>0</u>	<u>0</u>	0	0	<b>0</b>	<b>1</b>	0	0
Matatu	16	<u>25</u>	<u>15</u>	19	16	16	17	22	7
Shared taxi	0	<u>0</u>	<u>0</u>	0	0	1	0	0	0
Bike taxi	1	<u>0</u>	<u>0</u>	0	1	1	2	0	0
Municipal bus	2	<u>10</u>	<u>0</u>	4	2	2	1	5	0
N	1,897	13	25	38	1,859	820	1,077	30	8
Transport time (minutes)									
	22	<u>15</u>	<u>18</u>	17	22	<b>18</b>	<b>24</b>	16	20
N	1,861	13	25	38	1823	810	1051	30	8
One-way trip cost to work/school (KSh)									
	290	<u>207</u>	<u>76</u>	<u>165</u>	<u>294</u>	<u>99</u>	<u>443</u>	170	80
N	390	7	3	10	380	178	212	9	1
Households with road access as:									
Poor	35			38	35	<b>27</b>	<b>42</b>	35	44
Good	65			62	65	<b>73</b>	<b>58</b>	65	56
N	1,031			20	1011	493	538	14	6
Percent of households with limited road access during rainy season									
	17			0	<b>18</b>	<b>7</b>	<b>26</b>	0	0
N	1,027			20	1007	492	535	14	6

Notes:

a. Informal areas only.

b. To work or to school. May not add to 100% since "Other", which was negligible, is not reported in table.

## D.4 Access to Communications

While land lines are practically nonexistent among households in Garissa, mobile phone ownership is widespread. The average household owns 1.5 mobile phones, a number that is significantly higher among the non-poor. A remarkably large number of those with mobile phones use mobile banking (78%), a number that is also significantly higher among the non-poor. On the other hand, relatively few respondents have a computer (3%) and only 14% reported accessing the internet using any means, a figure which is significantly and doubly higher among non-poor households than poor households (18% vs. 9%); none of the twenty households in informal areas reported using the internet.

**Table D.4: Access to communications**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with functioning land line	1	0	1	1	1	0	0
N	1,032	20	1,012	493	539	14	6
Average number of mobile phones owned by household	1.5	1.2	1.5	1.4	1.7	1.2	1.2
N	1,029	20	1,009	490	539	14	6
Percent of households using mobile banking	78	76	78	73	82	73	83
N	1,031	20	1,011	492	539	14	6
Percent of households with functioning computer	3	0	3	3	4	0	0
N	1,032	20	1,012	493	539	14	6
Percent of households using internet (any means)	14	0	14	9	18	0	0
N	1,032	20	1,012	493	539	14	6

## D.5 Access to Infrastructure Indicator

The access to infrastructure indicator combines six categories of infrastructure (divided into 13 subcategories) weighted by importance to the household and summed to create a household indicator from 0 to 9.5.<sup>15</sup> Higher scores represent better access to infrastructure. This indicator provides an overall understanding of a household’s infrastructure access. By averaging households’ scores on the indicator, we can quickly compare infrastructure access in informal and formal areas, between poor and non-poor households, and between male- and female-headed households in informal areas.

Table D.5 presents household mean scores on the access-to-infrastructure indicator. The mean score across all households in Garissa is 4.25. Households in formal areas score significantly higher than households in informal areas by half a point. Perhaps surprisingly, poor households score significantly higher than non-poor households by half a point as well.

**Table D.5: Access to infrastructure indicator**

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Mean score on access to infrastructure indicator	4.25	<b>3.69</b>	<b>4.26</b>	<b>4.44</b>	<b>4.09</b>	3.54	4.00
N	1,032	20	1012	493	539	14	6

<sup>15</sup> The 13 subcategories are: piped water (1 point); shared/indirect connection (0.5 points); direct electricity access (1); street lighting (0.5); garbage collection system (1); own toilet (1); shared toilet with less than 20 other people (0.5); legal sewer system for toilet (0.5); grey water not poured onto street (0.5); good road access at dwelling (0.5); road access not limited during rainy season (0.5); no flooding (1); no mudslides (1).

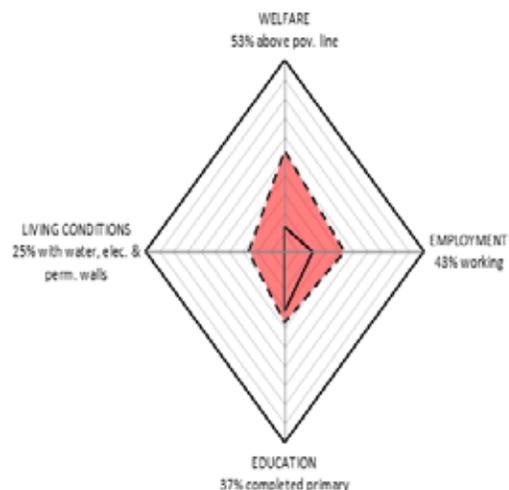
# CONCLUSIONS

The following three figures are “Development Polygons”. These polygons are meant to complement the detailed tables presented in sections A through D by illustrating an “overall” sense of the state of the city. We present information for all areas, along with formal and informal areas, in each of the three figures: the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond.<sup>16</sup> In all figures, the value labels included provide the value of the indicator for all areas. The statistics underlying these figures are also in the tables, above. Similar graphics also appear in the City-at-a-Glance Reports and the Overview Report produced under the NORC contract.

The axes for all figures represent percentages. Polygons with larger areas represent a “better” situation in regards to the associated indicator(s). Hence, a polygon with full coverage would indicate that the city is doing very well in terms of development, infrastructure, or living conditions.

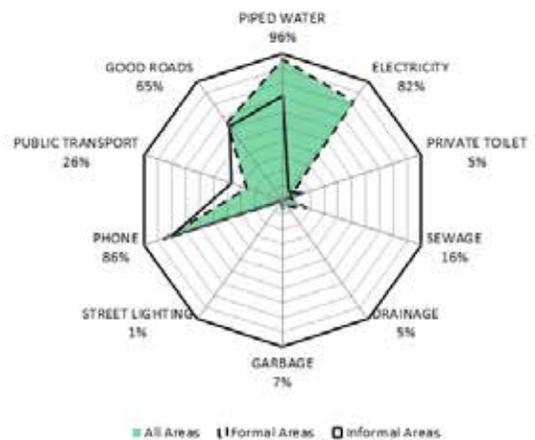
The Development Diamond (Figure 1) maps four indicators of poverty—welfare, employment, education, and living conditions. Recall that there were only twenty informal households in our Garissa sample, so the estimates for informal areas here and in the other polygons are unlikely to be reliable. Overall, we found about 53% of households in Garissa are above the poverty line while less than half of household members (43%) were working. Education levels were also low; only 37% had completed primary. Living conditions were quite basic, as only 25% of households have permanent walls and access to both piped water and electricity.

**Figure 1: Development diamond**



The Infrastructure Polygon shown in Figure 2 presents residents’ access to ten different types of infrastructure—piped water, electricity, private toilets, sewage, drainage, garbage collection, street lighting, mobile phones, public transport, and good roads. Piped water and electricity access are quite prevalent, while scores are quite low on private toilets, proper sewage, proper drainage, and garbage collection. Almost no households report functioning street lighting. Phone usage is nearly ubiquitous. About one-quarter of all household members report using public transport to get to work or school. Finally, 65% said that their road access was in good condition, a figure that was, surprisingly, higher among the poor.

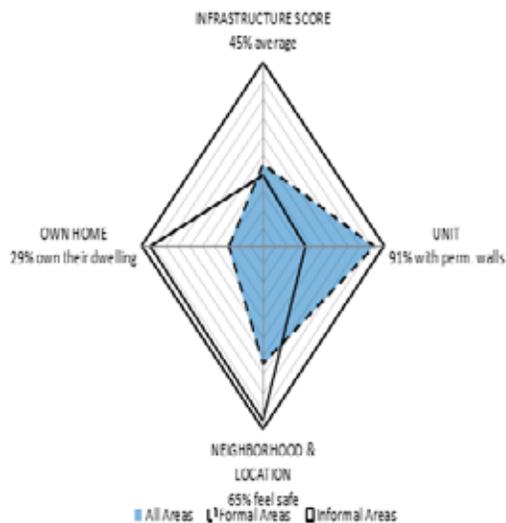
**Figure 2: Infrastructure polygon**



<sup>16</sup> The basic format for all three figures appear in the World Bank Policy Research Working Paper, “Poverty, Living Conditions, and Infrastructure Access” A Comparison of Slums in Dakar, Johannesburg, and Nairobi” by Sumila Gulyani, Debabrata Talukdar, and Darby Jack (2010). We strived to make our own figures as similar as possible, though some deviations, noted in the accompanying text, were necessary.

Figure 3 presents the Living Conditions Diamond. The four axes of this diamond are the infrastructure score (scaled to a percentage of the total possible points), unit conditions, neighborhood and location, and home ownership. The average infrastructure score was 45%, almost all households (91%) have permanent walls, 65% report feeling safe, and about one-third own their home.

Figure 3: Living conditions diamond





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